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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,931	08/29/2001	Koji Arimura	M2047-22	6323

7278 7590 10/04/2004

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EXAMINER

KRONENTHAL, CRAIG W

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/941,931	Applicant(s) ARIMURA ET AL.	
	Examiner Craig W Kronenthal	Art Unit 2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) 1-23 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>08/29/01, 12/16/03</u> | 6) <input type="checkbox"/> Other: ____ |

Claim Objections

1. Claims 1-23 are objected to because of the following informalities:

- The abbreviation "AV" is not clarified in the claims. Parentheses with the phrase "audio video" enclosed should follow the first usage of this abbreviation on page 22 (first page of claims), line 9. Please note that clarification is only needed once to remove this objection from all claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 recites the limitation "recording medium" in line 26 on page 23 (second page of claims). There is insufficient antecedent basis for this limitation in the claim. A "recording medium" is not mentioned in claim 1. It is believed that claim 9 should be rewritten as follows:

A reproduction equipment as set forth in claim 1, further comprising a recording medium for recording a copy of said watermark-embedded AV signals that are recorded by said reproduction equipment.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 11, 12, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Copeland (PN 5,739,864).

Regarding Claim 1 and 22: Copeland discloses a reproduction equipment comprising:

- A digital watermark generating means (22). The digital watermark generating means is shown in Figure 1 with the name Data Modulator.
- Said digital watermark generating means (22) including means for generating a digital watermark containing attribute information that specifies a reproduction equipment (col. 2 lines 8-9). The digital watermark data or fingerprint data (20) carries an ID for indicating the reproduction equipment or unit. This fingerprint data (20) is sent to the digital watermark generating means (22) which formats the data into a digital watermark for embedding.
- A digital watermark embedding means (14). The video processor (14) in figure 1 represents the digital watermark embedding means.

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- Said digital watermark embedding means including means for generating watermark-embedded AV signals which embeds said digital watermark in said AV signals (col. 2 lines 55-58). The video processor (14) is responsible for embedding or adding the digital watermark to an inputted video signal (12) producing a digital watermarked video signal (34).
- Output means for outputting said watermark-embedded AV signals to an exterior (col. 2 lines 59-64). The video processor (14) outputs the watermark-embedded signal (34) to exteriors such as projectors and video monitors.

Regarding Claim 11: Copeland discloses a reproduction equipment specifying system comprising:

- A reproduction equipment (14 and 40)
- Said reproduction equipment including a reproduction equipment specifying equipment. The combination of a video processor which specifies items 16, 22, 20, 21, 28, and 18 for embedding a watermark and a finger print reader (40) which specifies items 42, 44, 50, 82, 52, 84, 86, 56, 62, 64, 60, 58, 72, and 76 for reading a watermarked signal, make up the reproduction equipment.
- Said reproduction equipment specifying equipment including attribute information that enables specifying at least one attribute of said reproduction equipment (col. 2 lines 15-16). The data modulator (22) includes attribute information (finger print data 20) specifying reproduction equipment (col. 2 lines 8-9).

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- Means in both said reproduction equipment and said reproduction equipment specifying equipment for containing said attribute information (col. 2 lines 23-22). The data modulator (22) contains source ID number in the second set of 16 bits.
- Said reproduction equipment including means for embedding in an AV signal, as a digital watermark, said attribute information that enables specifying said reproduction equipment to an exterior (col. 2 lines 55-58). The video processor (14) adds or embeds the finger print data (20), containing the source ID number to the video in (12).
- Said reproduction equipment including means for extracting said digital watermark embedded in said AV signal and for specifying said reproduction equipment associated with said AV signal based on the extracted digital watermark (col. 2 lines 65-67). The finger print reader (40) extracts the data out (80) specifying the ID source number of the video in (12).

Regarding Claim 12: Copeland discloses a reproduction method, comprising:

- Generating a digital watermark (22). The digital watermark generating is shown in Figure 1 with the name Data Modulator.
- The step of generating a digital watermark including generating a digital watermark containing attribute information that enable specifying of a reproduction equipment (col. 2 lines 8-9). The digital watermark data or fingerprint data (20) carries an ID for indicating the reproduction equipment or

unit. This fingerprint data (20) is sent to the digital watermark generating means (22), which formats the data into a digital watermark for embedding.

- Embedding said digital watermark in AV signals to produce watermark-embedded AV signals (col. 2 lines 55-58). The video processor (14) is responsible for embedding or adding the digital watermark to an inputted video signal (12) producing a digital watermarked video signal (34).
- Outputting said watermark-embedded AV signals to an exterior (col. 2 lines 59-64). The video processor (14) outputs the watermark-embedded signal (34) to exteriors such as projectors and video monitors.

5. Claims 10, 21, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujihara et al. (PN 6,246,802). (hereinafter Fujihara)

Regarding Claims 10, 21, and 23: Fujihara discloses a reproduction equipment specifying equipment comprising:

- An input unit (Fig. 7, 81). As depicted in Fig. 7, the variable word length decoder (81) belongs to the decoder and has an input represented by the arrow pointing at the variable word length decoder (81).
- Means for inputting AV signals containing an identification code embedded therein as a digital watermark (Fig. 7, 81). The variable word length decoder (81) receives AV signals, embedded with an identification code, from variable word length encoder (61).

- A signal sequences recording unit (6d, not shown on Fig. 7, but understood to be the dashed box to the lower right, col. 10 line 37). Fujihara's decoder (6d) and recording means (Fig. 1, 70) both represent a signal sequence recording unit.
- Said signal sequences recording unit (Fig. 7, decoder, 6d) including means for holding a correspondence table (Fig. 7, 32) of the same contents as that of a reproduction equipment (5a, not shown on Fig. 7, but understood to be the dashed box to the upper left, col. 10 line 37). The table (32) can be found in both the decoder (6d) and the encoder (5a).
- A correlation value calculation unit (Fig. 3, 126) including means for calculating correlation values of input AV signals (Fig. 3, 48) and all of said signal sequences (Fig. 3, arrow leaving EMD 30) contained in said correspondence table and for outputting a maximum correlation value among correlation values obtained. The partial average calculator (Fig. 3, 48) calculates the correlation value for the AV signals and the inner product calculator (Fig. 3, 126) calculates the correlation value of all signal sequences and outputs the maximum correlation value. Figure 3 shows the set-up of these two units in a detector (120). This detector (120) and the electronic mark data (30) correspond to the detector (122) and table (132) in Figure 7, respectively.
- A threshold value setting unit including means for setting a threshold value for said correlation values (Fig. 3, 127).
- A comparison unit including means for comparing said maximum correlation value with said threshold, and for outputting a one of said signal sequences for

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which said maximum correlation value exceeds said threshold value (Fig. 3, 128).

- An identification code judgment unit including means for determining an identification code in accordance to said signal sequences output from said comparison unit and said correspondence table (col. 11 lines 15-26). The detection controller (Fig. 7, 181) and electronic mark data selector (Fig. 7, 151) work together to determine the appropriate identification code from the table (Fig. 7, 32).
- An identification code output unit (Fig. 6, 132) including means for outputting said identification code. The detection indicator (Fig. 6, 132) receives the comparison unit's (Fig. 3, 128) output and displays the identification code.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-9 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Copeland in view of Fujihara.

Regarding Claims 2 and 13: Copeland discloses a reproduction equipment comprising:

- An identification code generating unit including means for generating an identification code by which a reproduction equipment can be specified (col. 2 lines 18-21). The Data Modulator (Fig. 1, 22) is also responsible for generating the 16 bits of the digital watermark representing the source ID number.
- A digital watermark embedding unit (Fig. 1, 14) including means for embedding said identification code as digital watermark in said AV signals input from said decoding unit (col. 2 lines 55-58). The video processor (14) is responsible for embedding or adding the digital watermark to an inputted video signal (Fig. 1, 12) producing a digital watermarked video signal (Fig. 1, 34).
- An output unit, which outputs to an exterior, AV signals containing embedded therein said digital watermark prepared by said digital watermark embedding unit (col. 2 lines 59-64). The video processor (Fig. 1, 14) outputs the watermark-embedded signal (Fig. 1, 34) to exteriors such as projectors and video monitors.

Copeland discloses a reader (Fig. 3, 40), but for the purpose of recovering the watermarked data (Fig. 1, 30) as opposed to the original input data (Fig. 1, 12).

However, Fujihara discloses:

- A coded signal input unit for receiving coded AV signals (Fig. 7, 81). The variable word length decoder (81) belonging to the decoder receives the coded AV signals from variable word length encoder (Fig. 7, 61).
- A decoding unit including means for reproducing said AV signals from said coded signal input unit (6d, not shown on Fig. 7, but understood to be the dashed box to

the lower right, col. 10 line 37). The decoder (6d) outputs a reproduced image (110), which may be an AV signal such as an MPEG (col. 12 lines 34-37).

It would be obvious to one skilled in the art to modify Copeland with the teachings of Fujihara in order to include a coded signal input unit and decoding unit in Copeland's reproduction equipment because there are essential components for receiving encoded signals conventionally utilized in image processing coding procedures. The encoded AV signal disclosed by Copeland could be outputted to the decoder disclosed by Fujihara instead of Copeland's reader.

Regarding Claims 3 and 14: Copeland further discloses a reproduction equipment as set forth in claim 2, wherein said identification code is at least one of an equipment ID of said reproduction equipment, a card ID of an IC card connected to said reproduction equipment, a user ID of a user, a raw material ID of said AV signals are stored, a reproduction date and time, and an initial value of a signal sequence to be embedded as said digital watermark (col. 2 lines 7-9). Copeland says the fingerprint data or identification code may include an equipment ID and date.

Regarding Claims 4 and 15: Copeland as modified by Fujihara discloses reproduction equipment as set forth in claim 2. Fujihara further discloses that an output of said identification code generating unit includes a plurality of signal sequences, and a table of correspondence of at least one of character strings and numbers, that express identification codes, and means for employing a correspondence for selection of said

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signal sequences (col. 10 lines 56-62). Fujihara uses an electronic watermark data table (Fig. 7, 32) to provide an embedding means (Fig. 7, 41) with multiple signal sequences representing locations of watermark data. In Fujihara's 5th embodiment the identification code generating unit comprises an electronic watermark data table (32), an electronic mark data selector (Fig. 7, 151), a feedback controller (Fig. 7, 161), and a feedback unit (Fig. 7, 171). A numerical variable *j* is used as a counter to sequentially add the addresses within a table corresponding to identification codes.

Regarding Claims 5 and 16: Copeland as modified by Fujihara disclose reproduction equipment as set forth in claim 4. Copeland discloses the equipment further comprising:

- Means for converting said identification code into a binary bit string (col. 2 lines 20-21). The identification code, which may be a source ID, is represented in the digital watermark or fingerprint data format as a series of 16 bits.

Fujihara discloses the equipment further comprising:

- Means for selecting a plurality of signal sequences, which correspond to the positions of the converted bit string that take on a specific value (col. 11 lines 21-26). The detection controller (Fig. 7, 181) controls the detector (Fig. 7, 121, mislabeled 122), which selects a plurality of signal sequences from the watermark embedded signal, and uses the signal sequences to look up the identification codes found in the table (Fig. 7, 32).

Regarding Claims 6 and 17: Copeland as modified by Fujihara disclose reproduction equipment as set forth in claim 4. Fujihara further discloses that said plurality of signal sequences are signal sequences with which cross correlation values are smaller than a previously set threshold value (col. 7 lines 58-62). The addresses corresponding to the location of the information codes are different, so their similarity or correlation values would be less than the threshold value (Fig. 3, 127) resulting in the detector finding different addresses.

Regarding Claims 7 and 18: Copeland as modified by Fujihara disclose reproduction equipment as set forth in claim 4. Fujihara further discloses that said digital watermark embedding unit embeds a different signal sequence in each of a predetermined unit of said AV signals (col. 10 line 56- col. 11 line 3). As depicted in Figure 7, the electronic mark data selector (151), feedback controller (161), and feedback unit (171) utilize a counter j to iterate through the table (32) so to prevent signal sequences from duplicating an address thereby yielding a different signal sequence in each AV signal.

Regarding Claims 8 and 19: Copeland as modified by Fujihara discloses reproduction equipment as set forth in claim 7. Copeland discloses that said digital watermark embedding unit embeds a signal sequence, to be embedded as the digital watermark, randomly at a same proportion per fixed time in said AV signals (col. 2 lines 19-21). The sync word generator (Fig. 1, 21) generates the first 16 bits of each signal sequence randomly and therefore each signal sequence is embedded randomly. Copeland does

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not disclose doing this for a plurality of signal sequences, but if Copeland were to be modified by Fujihara for reasons explained regarding claim 2, then Copeland would randomly create the 16 bits for each of the signal sequences in Fujihara's table (Fig. 7, 32).

Regarding Claims 9 and 20: Copeland discloses reproduction equipment as set forth in claim 1, but does not mention the use of a recording medium. However, Fujihara discloses reproduction equipment comprising a recording medium for recording a copy of said watermark-embedded AV signals that are recorded by said reproduction equipment (col. 3 lines 49-53). Fujihara specifies several recording mediums (Fig. 1, 70) available to record a copy of watermark-embedded AV signals outputted by an encoder (Fig. 1, 3).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Rhoads (PN 5,636,292) is cited for teaching steganography methods applicable to AV signals and utilizing binary identification codes within watermark data.
- Mabey et al. (PN 4,885,632) is cited for teaching a system and methods for watermarking AV signals with identification such as date, time, and most importantly source.

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- Kurowski (PN 6,553,127) is cited for teaching an apparatus including watermark embedding of AV signals and watermark detecting.
- Nakano (EP 0 859 503 A2) is cited for teaching watermarking utilizing a table and detection utilizing an ID for looking up watermark data.
- Nakamura et al. (EP 0 903 943 A2) is cited for teaching the placement of watermark information in an AV signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig W Kronenthal whose telephone number is (703) 305-8696. The examiner can normally be reached on 8:00 am - 5:00 pm / Mon. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 306-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CWK
09/24/04

MEHRDAD DASTOURI
PRIMARY EXAMINER

